



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,467	10/31/2003	David N. Cox	ABDT-0583/B030070	2777
23377	7590	03/27/2006		
WOODCOCK WASHBURN LLP ONE LIBERTY PLACE, 46TH FLOOR 1650 MARKET STREET PHILADELPHIA, PA 19103			EXAMINER FERNANDEZ RIVAS, OMAR F	
			ART UNIT 2129	PAPER NUMBER

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/699,467

Applicant(s)

COX ET AL.

Examiner

Omar F. Fernández Rivas

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date A1-AZ.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 1-22 are pending on this application.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. For a claimed invention to be statutory the claimed invention must produce a useful, concrete, and tangible result. The Courts have found that subject matter that is not a practical application or use of an idea, a law of nature or a natural phenomenon is not patentable. See, e.g., *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874) ("idea of itself is not patentable, but a new device by which it may be made practically useful is"); *Warmerman*, 33 F.3d at 1360, 31 USPQ2d at 1759.

For a claimed invention to be statutory under 35 U.S.C. 101, the claims must have the FINAL RESULT (not the steps) produce a useful (specific, substantial, AND credible), concrete (substantially repeatable/ non-unpredictable), AND tangible (real world/ non-abstract) result.

If the specification discloses a practical application but the claim is broader than the disclosure such that it does not require the practical application, then the claim must

be amended. A claim that recites a computer that solely calculates a mathematical formula is not statutory.

In the present case, claim 1 describes a method for predicting transformer performance. The claim provides a number of steps that describe how this prediction is made. There is no mention as to what is done with this prediction once it is obtained. The result is not presented to a user or provided to an outside device. The result is kept within the system, thus making it abstract (not tangible). Claims 2-11 fail to provide this tangibility lacking in claim 1 and are therefore rejected on the same basis.

Claims 12-22 recite a system for performing the same predictions as the method of claims 1-11 and are therefore rejected on the same basis as claims 1-11.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geromel et al. in view of Doulamis et al ("The Application of Intelligent Systems in Power Transformer Design", Proceedings of the 2002 IEEE Canadian Conference on Electrical and Computer Engineering, May 12-15, 2002, referred to as **Geromel**; "A Synergetic Neural Network Genetic Scheme for Optimal Transformer Construction", Integrated Computer Aided Engineering, 2002, referred to as **Doulamis**).

### **Claims 1 and 12**

Doulamis teaches a method for predicting transformer performance (**Geromel**: pages 287-290, sections 4.1-4.5), comprising: receiving information representative of a plurality of built transformers, comprising measured test information for each built transformer (**Geromel**: pages 285, Abstract, L13-15; page 287-288, section 4.1, L1-13); receiving a second transformer design specification (**Geromel**: page 287, section 3.2; Fig. 2; pages 287-288, section 4.1, L1-7; Examiner's Note (EN): the wished final parameters ( $B_N$  current density and winding height are design specifications); and determining, via an intelligent system, a predicted test result for the second transformer design specification based on the second transformer design specification and the information representative of the plurality of built transformers (**Geromel**: pages 287-290, sections 4-4.5; Fig. 2; EN: a neural network is an intelligent system) .

Geromel does not teach the information comprising a design specification for each built transformer.

Doulamis teaches the information comprising a design specification for each built transformer (**Doulamis**: page 48, section 6.3, L1-4, Fig. 2; EN; operational variables (100 KVA, 50 Hz) are design specifications).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Geromel by incorporating information of a design specification of each transformer as taught by Doulamis for the purpose of having means to measure how the design of the transformers affect their performance.

**Claims 2 and 13**

Geromel teaches the intelligent system comprises a neural network (**Geromel**: pages 285, abstract, L1-5; Fig. 2).

**Claims 3 and 14**

Geromel does not teach the intelligent system comprises a genetic algorithm.

Doulamis teaches the intelligent system comprises a genetic algorithm (**Doulamis**: page 37, abstract, L3-6; page 48, section 6.3).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Geromel by incorporating a genetic algorithm to the intelligent system as taught by Doulamis for the purpose of having means to refine the results obtained from the intelligent system, so that more fit results are produced by the system.

**Claims 4 and 15**

Geromel teaches the intelligent system comprises fuzzy logic (**Geromel**: page 287, section 3.2, L1-9; operating on variables where the relationships are not well defined is fuzzy logic).

**Claims 5 and 16**

Geromel teaches receiving the second transformer design specification comprises receiving, from a user interface, the second transformer design specification (**Geromel**: page 287, section 4; L1-6; section 4.1, L1-2; Fig. 2; EN: a user interface must be provided to input the desired final parameters (design specifications)).

**Claims 6 and 17**

Geromel teaches the information representative of a plurality of built transformers further comprises manufacture information for each built transformer (**Geromel**: page 287, section 4.1, L1-2; EN:  $B_N$ ,  $\alpha$  and winding height are manufacturing information).

**Claims 7 and 18**

Geromel does not teach the manufacture information for each built transformer comprises at least one of the group of an indication of a manufacturing plant associated with the built transformer, an indication of a piece of manufacturing equipment associated with the built transformer, an indication of a calibration date of manufacturing equipment associated with the built transformer, and an indication of a retooling date of manufacturing equipment associated with the built transformer.

Doulamis teaches the manufacture information for each built transformer comprises at least one of the group of an indication of a manufacturing plant associated with the built transformer, an indication of a piece of manufacturing equipment associated with the built transformer, an indication of a calibration date of manufacturing equipment associated with the built transformer, and an indication of a retooling date of manufacturing equipment associated with the built transformer (**Doulamis**: page 48, section 6.2; EN: changes in production conditions is a change in manufacturing equipment).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Geromel by incorporating the manufacture information for each built transformer comprises at least one of the group

Art Unit: 2129

of an indication of a manufacturing plant associated with the built transformer, an indication of a piece of manufacturing equipment associated with the built transformer, an indication of a calibration date of manufacturing equipment associated with the built transformer, and an indication of a retooling date of manufacturing equipment associated with the built transformer as taught by Doulamis for the purpose of having means to compare how the different manufacturing methods affect the performance of a transformer.

#### **Claims 8 and 19**

Geromel does not teach the information representative of a plurality of built transformers further comprises as-built information for each built transformer.

Doulamis teaches the information representative of a plurality of built transformers further comprises as-built information for each built transformer (Doulamis: page 48, section 6.3, L1-4; EN: the operational parameters (100 KVA, 50 Hz) are as-built information).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Geromel by incorporating the information representative of a plurality of built transformers further comprises as-built information for each built transformer as taught by Doulamis for the purpose of having means to predict the performance of a transformer with information collected from transformers that were constructed with certain design specifications.



**Claims 9 and 20**

Geromel teaches the measured test information for each built transformer comprises at least one of the group of measured transformer load loss, measured transformer impedance, measured transformer ratio, measured transformer turn-to-turn faults, measured transformer high-potential test results, measured transformer double induced test results, measured transformer impulse test results, measured transformer heat run test results, measured transformer sound level, and measured transformer short circuit test results (**Geromel**: page 285, abstract, L13-15; pages 287-288, section 4.1, L1-13; Fig. 2).

**Claims 10 and 21**

Geromel teaches determining the predicted test result comprises determining the predicted test result without using a model based on theoretical relationships (**Geromel**: page 285, abstract, L1-5; pages 287-290, sections 4-4.5; EN: the neural networks use learned rules to produce its outputs).

**Claims 11 and 22**

Geromel teaches receiving a manufacturing specification for the second transformer design (**Geromel**: page 287, section 4.1, L1-2); and wherein determining the predicted result comprises determining, via an intelligent system, a predicted test result for the second transformer design specification based on the second transformer design specification, the information representative of the plurality of built transformers, and the manufacturing specification for the second transformer design (**Geromel**: pages 287-290, sections 4-4.5; Fig. 2).

**Conclusion**

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Coleman et al US Patent #4,857,856

Poyser et al US Patent #4,654,806

5. Claims 1-22 are rejected.

**Correspondence Information**

6. Any inquires concerning this communication or earlier communications from the examiner should be directed to Omar F. Fernández Rivas, who may be reached Monday through Friday, between 8:00 a.m. and 5:00 p.m. EST. or via telephone at (571) 272-2589 or email [omar.fernandezrivas@uspto.gov](mailto:omar.fernandezrivas@uspto.gov).

If you need to send an Official facsimile transmission, please send it to (571) 273-8300.

If attempts to reach the examiner are unsuccessful the Examiner's Supervisor, David Vincent, may be reached at (571) 272-3080.

Hand-delivered responses should be delivered to the Receptionist @ (Customer Service Window Randolph Building 401 Dulany Street Alexandria, VA 22313), located on the first floor of the south side of the Randolph Building.

Omar F. Fernández Rivas  
Patent Examiner  
Artificial Intelligence Art Unit 2129  
United States Department of Commerce  
Patent & Trademark Office

**DAVID VINCENT**  
**SUPERVISOR PATENT EXAMINER**

Monday, March 20, 2006

OFR